<u>Responses to Public Utilities Board Questions to Actuarial Report for the Campaign to Protect Accident Victims</u>

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August 8, 2018

Question 1:

Page 1, item #6. The report states the NL severity trend for PD is similar to that of BI.

a) State the BI and PD severity trend rates underlying this statement, and explain the data included in each regression analysis for these measurements. Include a list of all parameters of the regression models and the resulting statistical fits of the regression analyses.

b) How does the NL BI severity trend rate from question 1(a) above compare to the CPI rate in NL?

Response:

a) The BI and PD severity trend is 4.4% per year.

This is based on regression analysis that fits an exponential curve to the severities for the years 2004 through 2017.

The data used to determine severity is cumulative paid loss and ALAE, current outstanding loss and ALAE, cumulative count of claims paid, and current count of claims outstanding, from the GISA report AUTO7001-ATL-201712 as at December 31, 2017, published May 23, 2018 (the most current available report of this data for the Atlantic provinces). The case incurred loss and ALAE and the reported counts calculated from this data were then developed to ultimate using the GISA report AUTO0001-ATL-201612, as at December 31, 2016, published June 30, 2017 (the most current available GISA report of loss development factors for the Atlantic provinces).

The severity for BI and PD, and CPI for NL, is shown in Table Q1-1 below.

Table Q1-1 – BI and PD Severity

Accident Year	BI Severity (dollars)	PD Severity (dollars)
2001	33,789	2,635
2002	34,374	2,809
2003	35,365	2,866
2004	36,954	2,667
2005	40,766	2,824
2006	39,593	2,738
2007	45,293	3,131
2008	42,545	3,359
2009	45,232	3,192
2010	51,446	3,215
2011	50,935	3,379
2012	53,280	3,632
2013	54,269	4,104
2014	54,907	4,158
2015	64,693	4,388
2016	63,847	4,514
2017	63,336	4,489

The parameters and test of fit (R-Squared) of the model chosen are as shown in the two equations below:

BI Severity = 36,117 * exp[0.0426 * (Year – 2003)], R-squared = 0.9495

PD Severity = 2,534 * exp[0.0431 * (Year - 2003)], R-squared = 0.9476

A variety of beginning and end points, between accident years 2001 and 2017 were analyzed. For BI, similar trends with high measures of fit (R-squared greater than 0.90) were seen for starting points from 2001 through 2008 and for ending points from 2013 through 2017. For PD, similar trends with R-squared greater than 0.90 were seen for starting points from 2004 through 2007 and for ending points from 2014 through 2017.

b) The trend in CPI is 2.0%, based on a regression between 2004-2017 is 2.0% (R-Squared of 0.9940).

Note that the trend in BI Loss and ALAE cost per vehicle, which incorporates the favorable trend in BI frequency, is 2.6% (4.7% for PD), using a similar process of regression over a stable duration (which again was 2004-2017).

Table Q1-2, CPI for NL and Loss and ALAE per Vehicle for BI and PD

Accident Year	CPI for NL	BI Loss and ALAE per Vehicle (dollars)	PD Loss and ALAE per Vehicle (dollars)
2001	97.7	317	71
2002	100.0	316	71
2003	102.9	328	73
2004	104.8	289	63
2005	107.6	308	67
2006	109.5	282	65
2007	111.1	319	75
2008	114.3	289	74
2009	114.6	302	78
2010	117.4	356	79
2011	121.4	355	87
2012	123.9	373	91
2013	126.0	392	107
2014	128.4	363	104
2015	129.0	422	110
2016	132.5	388	104
2017	135.7	350	100

Question 2:

Page 2, item #1. The report states "Minor Injury Regulation appears not to have appreciably reduced the frequency of BI claims in other Atlantic provinces, above and beyond the trends that were already in place." What does "appears not to have appreciably reduced" mean specifically? Provide the regression analysis findings to support that the 2003 MIR "appears not to have appreciably reduced" the BI frequency for NS and NB.

Response:

Nova Scotia

The regression analyses for frequency trends in Nova Scotia show the following average annual change in frequency.

Table Q2-1, NS Average Annual Change in Frequency

Range of Accident Years	Average Annual Change in Frequency	R-Squared
2001-2003	-10.9%	0.9777
2001-2004	-9.8%	0.9803
2001-2005	-8.2%	0.9483
2001-2009	-7.4%	0.9462

This shows that the frequency was declining prior to the reform, and that the magnitude of the decline actually slowed down after the implementation of the cap in 2003. Thus, the cap does not have the effect of decreasing the frequency beyond the trend already in place.

New Brunswick

The regression analyses for frequency trends in New Brunswick show the following average annual change in frequency.

Table Q2-1, NB Average Annual Change in Frequency

Range of Accident Years	Average Annual Change in Frequency	R-Squared
2001-2003	-16.1%	0.9999
2001-2004	-16.3%	0.9998
2001-2005	-12.3%	0.8896
2001-2009	-9.9%	0.9460

This shows that the frequency was declining prior to the reform, and that the magnitude of the decline was similar in 2004 after the implementation of the cap, and actually slowed down after 2005. Thus, the cap does not have the effect of decreasing the frequency beyond the trend already in place.

Question 3:

Page 2, item #4. Provide the BI average incurred ALAE (i.e., severity) by accident year for the years 2000 to 2007 in each of NS and NB to support the statement that the MIR caps in those two provinces have not brought about a reduction in ALAE costs beyond that already in place.

Response:

I wish to point out that my statement was that MIR "caps introduced in New Brunswick and Nova Scotia have not brought about reductions in ALAE costs, beyond *those from trends* [emphasis added] already in place. "

As requested, I provide below in Table Q3-1 the BI average incurred ALAE per claim (severity) for accident years 2000-2007 for NB and NS.

Table Q3-1 BI ALAE Severity, NB and NS

Accident Year	BI ALAE Severity, NB	BI ALAE Severity, NS
2000	4,735	3,841
2001	4,814	3,750
2002	5,148	4,327
2003	5,751	4,383
2004	4,140	4,584
2005	5,246	3,888
2006	4,513	3,556
2007	4,763	3,454

The ultimate ALAE amounts (and hence severities) were calculated using loss development factors that I calculated based on BI ALAE claims development from the GISA AUTO7001-ATL-201712 database.

Regression analysis indicates that over the 2000-2007 accident years, NB BI ALAE severity decreased at an average annual rate of 0.7%, while NS BI ALAE severity decreased at an average annual rate of 1.5%.

Question 4:

a) The report states that the introduction of the MIR in NB and NS has not led to a sustainable level of profit for TPL. Given the author has concluded that the 2003 MIR has not "appreciably reduced the frequency of BI claims", did the author review the BI average severity before and after the MIR was introduced in 2003 to provide support for this statement? If so, provide the supporting data reviewed. If not, explain why not.

Response

a) Yes, I have reviewed the BI average severity before and after the MIR was introduced in 2003. Results of analysis of the BI average severity are provided in the responses to Questions 4(b) and 4(e) below.

However, the statement is based only on the following:

- the after-tax loss for the industry for NB for 2015 and 2016, as reported by GISA in AUTO9501-NB-2016, and
- the after-tax loss for the industry for NS for 2014, 2015 and 2016, as reported by GISA in AUTO9501-NS-2016.

The premise on which I based the statement is that industry-wide after-tax losses are, in general, unsustainable and require corrective action.

Question 4:

b) The following GISA 9001 table presents a 20-year history of ultimate loss experience (before and after the 2003 reforms were introduced) for NS and NB, along with NL experience. Which of the three provinces had the least stable TPL average claim cost since 2003?

Average Cost per Claim

Accident Year	NL	NB	NS
2000	12,689	14,703	13,842
2001	13,408	14,427	12,913
2002	12,632	14,967	13,701
2003	14,152	13,758	12,937
2004	14,222	10,615	10,479
2005	13,804	10,763	9,770
2006	15,336	9,643	9,011
2007	15,162	8,487	8,992
2008	16,585	8,266	7,950
2009	17,404	8,966	8,542
2010	17,131	8,652	8,877
2011	18,993	8,375	9,685
2012	19,410	8,246	9,848

Response:

b) The average claim costs presented in the table are for the entire TPL coverage. Thus, they include the PD coverage, which was not directly affected by the minor injury caps introduced in the 2003 reforms.

Separately examining the BI coverage, Table Q4-1 below shows the severity of BI claims alone, evaluated using GISA data at Dec. 31, 2017.

According to a regression analysis, between 2004 and 2012, the average annual growth in BI severity was 4.5% in NL, 6.8% in NB and 5.5% in NS. (Between 2004 and 2017, the average annual growth rates were 4.4% for NL, 7.6% for NB and 5.9% for NS).

Thus, based on BI severity alone, NL has had the lowest rate of growth in severity since 2004.

Table Q4-1 BI Severity, Evaluated at Dec. 31, 2017, for NL, NB and NS (dollars)

Accident Year	NL BI Severity per Claim, Evaluated at Dec. 31, 2017	NB BI Severity per Claim, Evaluated at Dec. 31, 2017	NS BI Severity per Claim, Evaluated at Dec. 31, 2017
2000	34,503	38,551	39,896
2001	33,789	36,578	36,606
2002	34,374	38,155	37,679
2003	35,365	32,966	34,274
2004	36,954	22,600	26,076
2005	40,766	28,183	25,412
2006	39,593	26,633	25,475
2007	45,293	25,597	26,191
2008	42,545	28,060	25,568
2009	45,232	36,746	28,956
2010	51,446	37,278	29,975
2011	50,935	37,668	37,269
2012	53,280	37,563	39,199
2013	54,269	39,912	35,505
2014	54,907	40,040	41,203
2015	64,693	49,915	43,868
2016	63,847	56,686	47,079
2017	63,336	70,582	50,480

Question 4:

c) All else being equal, as presented in the table above, would the reduction in average claim costs after the 2003 reforms in NS and NB contribute to lower required premiums?

Response:

c) Yes, all else being equal, the reduction in average claim costs after the 2003 reforms in NB and NS would contribute to lower annual premiums.

However, it is <u>not</u> true that all else, outside the table, is equal. It is also not clear that the 2003 reforms in NB and NS fully explain the changes in the average claim costs in the table, or the driving factors outside the table.

As will be shown in my response to Question 4 (e) below, the frequency of PD claims for NB and NS increased at an average annual rates of 4.0% and 2.0% respectively between 2004 and 2012. While this contributed to the decrease in the severity for the total TPL coverage, the increase in PD frequency also offset the decline in severity. Further, it is unlikely that the 2003 reforms led to the increase in PD frequency.

Also in my response to Question 4 (e), the decline in frequency of BI claims for NB and NS between 2004 and 2012 contributed to the decline in severity for the total TPL coverage. As pointed out on p. 15-17 of my July 18, 2018 report, it is my view that the 2003 reforms do not explain the downward trend in BI claim frequency, over and above trends already in place before the reforms.

Question 4:

d) Page 13 states "Bodily injury claims settlement costs appear to have a minor role, if any, in increases in average premiums in Newfoundland and Labrador since 2006." Based on the table above, with the growth in NL BI claims settlement costs, explain why Bodily Injury claim settlement costs would appear to have a "minor role" in the increases in premiums.

Response:

d) The table referenced in the question does not present BI claims severity. Rather, it presents severity for the entire TPL coverage.

Table Q4-1, which I provided above, does provide BI claims severity. The growth in BI claim severity, which is 4.5% per year, is offset by a continued decline in BI frequency.

As stated on p. 5 of my July 18, 2018 report, total premium between 2006 and 2017 has increased at an average annual rate of 2.3%. However, as stated on p. 6 of the report, TPL premium has increased at an annual average of only 1.3% per year – less than the growth in the Consumer Price Index, a measure of general inflation. The very modest average annual increase in the cost of TPL coverage between 2006 and 2017 thus implies that the costs of BI settlements are not generating rate increases above the rate of inflation. It is, thus, other coverages that account for the average annual increase in premium reaching 2.3%. In particular, as seen on p. 10 of my July 18, 2018 report, between 2006 and 2017 the percentage of NL policyholders carrying collision coverage has increased from 67% to 76%, and the percentage of NL policyholders carrying comprehensive coverage has increased from 71% to 81%.

Question 4:

e) What reason can the author provide as to why the 2012 average BI TPL severity in NL is $19, 410, but $8,246 in NB and $9,848 in NS; comment also on the fact that the average BI TPL severity for 2001 through 2003 was in the $12,000 to $15,000 range for all three provinces in question.

The 2012 average TPL severities cited, $19,410 in NL, $8,246 in NB, and $9,848 in NS, are not composed exclusively of BI claims. These average severities also include PD claims.

As seen in the response to Question 4 (b) above, the rate of growth of average BI severity since 2004 was greater for NB and NS than for NL. Further, the growth in frequency of low-severity PD claims (combined with DC claims where applicable) has been greater for NB and NS than for NL. This has been a contributing factor in holding down the average severity of TPL claims in those two provinces.

Table Q4-2 shows the progression in PD frequency for each of the three provinces. The table also shows that PD severity is much lower than the BI severity seen in Table Q4-1.

Table Q4 - 2 Frequency and Severity of PD (or PDDC) Claims

Accident Year	NL PD Frequency per 100 Vehicles	NB PD Frequency per 100 Vehicles	NS PD Frequency per 100 Vehicles	NL PD Severity	NB PD Severity	NS PD Severity
2004	2.36	1.62	1.90	2,667	3,383	3,195
2005	2.39	1.93	1.98	2,824	2,950	3,236
2006	2.38	2.05	2.11	2,738	3,085	3,228
2007	2.41	2.30	2.22	3,131	3,254	3,289
2008	2.21	2.36	2.12	3,359	3,249	3,308
2009	2.45	2.55	2.32	3,192	3,407	3,323
2010	2.46	2.40	2.31	3,215	3,451	3,328
2011	2.59	2.48	2.28	3,379	3,434	3,604
2012	2.51	2.20	2.18	3,632	3,428	3,649
2013	2.60	2.36	2.38	4,104	3,373	3,693
2014	2.50	2.52	2.64	4,158	3,779	3,790
2015	2.51	2.72	2.99	4,388	4,049	4,023
2016	2.30	2.47	2.76	4,514	4,138	4,299
2017	2.24	2.56	2.87	4,489	4,347	4,343

For NL, the regression analysis produces an average annual increase in the PD frequency of 1.0% between 2004 and 2012 (0.1% between 2004 and 2017). The corresponding, much higher, 2004-2012 growth rates for NB and NS are 4.0% and 2.0% respectively (for 2004-2017, 2.5% and 3.1% respectively). The growth in the frequency of lower-severity PD claims in NB and NS, and the decline in frequency of higher-severity BI

claims in NB and NS explains the decline in the severity between 2004 and 2012 for the combined TPL coverage for those two provinces.

Question 5:

What was the impact on the BI claims severity of the NS and NB 2003 minor injury reforms?

Response:

As seen in Table Q4-1, the 2003 reforms are correlated with a discontinuous decline in BI severity for NB from $32,966 in 2003 to $22,600 in 2004, followed by a bounce back to $28,183 in 2005. The corresponding change for NS was a decline from $34,274 to $26,076 (which persisted in 2005).

However, as noted in the response to Question 4 b), the subsequent growth rate in BI severity has been greater for NB and NS than NL. For NB, the growth rate between 2004 and 2012 was 6.8% and for NS, the rate was 5.5%. This compares to 4.5% for NL. (For the period 2004 to 2017, the growth rates are 7.6% for NB, 5.9% for NS and 4.4% for NL).

Although it appears to be a statistical anomaly and is based on immature claim data for the 2017 accident year, the BI severity for NB in 2017, $70,582, is greater than that for NL, $63,336.

Question 6:

What was the impact on the BI claims severity of the NL 2004/05 automobile insurance reforms?

Response:

Between 2004 and 2005, the BI severity in NL increased from $36,954 to $40,766. Since this change is not in line with the magnitude of historic trends, some portion of this change is likely due to the $2,500 deductible eliminating some smaller claims.

Question 7:

Page 4, Chart 1. Please explain the significance of including the RNC Accident Count in the analysis. In the response, please explain if the number of accidents reported to police is typically used in an automobile insurance actuarial analysis, including reasons why or why not.

Response:

The number of accidents assists in assessing whether the propensity to make a BI claim, in the event of an accident, has changed over time.

Since 2006, the number of accidents recorded by the RNC per 100 insured vehicles in NL has risen, then fallen. In 2006, the rate was 1.51 accidents per 100 insured vehicles. That rose to a peak of 2.10 in 2011, then fell, reaching 1.47 in 2017. The 2017 rate is only slightly less than the 2006 rate.

Over that time, the number of BI claims per 100 insured vehicles has declined from 0.71 in 2006 to 0.55 in 2017.

This indicates that the propensity to file a BI claim has declined significantly since 2006.

The number of accidents reported to police does get used in automobile insurance actuarial analyses. For example, the annual rate filing of the Insurance Corporation of British Columbia to the British Columbia Utilities Commission makes reference to the province's compilation of the number of accidents.

Question 8:

Page 4 states "…between approximately 2006 and 2013, the BI frequency remained approximately level at a rate reduced from 2003. This occurred even as the overall accident rate was increasing during that period, as indicated by the frequency of accidents as recorded by the Royal Newfoundland Constabulary.

   a) **Please confirm the regions of the province in which the RNC operates.**

Response:

The RNC has detachments in St. John's (the headquarters), Corner Brook, Labrador City, and Churchill Falls. According to the RNC website, "the RNC provides service to fifteen communities in three jurisdictions, and serves approximately 214,000 people in these jurisdictions."

The population of NL was 529,000 in 2016. Thus, the RNC jurisdiction covers about 40% of the population of the province, across a broad geographic area, including all three cities in the province, and the greater St. John's metropolitan area.

Question 8:

   b) **Are accidents that occurred outside the RNC's jurisdiction captured in the RNC Accident Count statistics? If no, please explain any limitations this presents in terms of the comparison between BI frequency and accident count presented.**

Response:

No, accidents that occurred outside the RNC's jurisdiction are not captured in the RNC Accident Count statistics. Thus, the absolute accident frequency per vehicle will be biased in the downward direction. However, the RNC statistics are used in this context to measure fluctuations in the accident rate from year to year. Since the RNC jurisdictions cover a large proportion of the population, across a broad geographic area, they can be expected to reflect annual fluctuations in the legal environment, the weather, and vehicle safety.

Question 9:

Page 7 states "there was a significant drop in average third party liability premium between 2003 and 2006, from $673 to $570. Such a decline in average premium is clearly below the increase in CPI." Please confirm the years in which the "significant drop" occurred and explain the effect that the NL 2004/05 automobile insurance reforms had on the average premiums over this period.

Response:

The average TPL premium reached $673 in 2003 and was $570 in 2006, as determined by dividing total TPL premium, as per the GISA report AUTO7001-ATL-201712, by the total number of vehicles carrying TPL coverage. I have not determined the effect that the NL 2004/05 automobile insurance reforms had on average premiums over this period. The average premiums I reported are based on the database collected and published by GISA.

Question 10:

Page 13 states "As noted above, the increased number of individuals purchasing optional physical damage coverage (collision, comprehensive, all perils and specified perils) appears to be driving the increase in average total premiums above the growth in the CPI."

It is noted that the Board has a simplified filing process for CLEAR rate group table updates which allows insurers to file certain rate increases for optional physical damages coverages on a file and use basis. In contrast, all rate increases to Third Party Liability coverage must be approved by the Board through a comprehensive actuarially justified rate filing in which insurers are invoiced for any applicable Board costs (e.g. cost of retaining a consulting actuary). It is also noted that there are no mandatory filing dates in NL and an insurer may file at its own discretion.

Please explain how such filing differences described above could affect the average annual rate increases for optional physical damage premiums compared to average annual rate increases for Third Party Liability.

Response:

I have no comment on the differences in filing requirements between optional physical damage coverages and Third Party Liability coverage. I have raised the issue of optional physical damage coverages in order to point out that the greatest part of the increase in auto insurance premium paid by policyholders has been due to increased amounts of optional physical damage insurance being purchased, rather than by rate increases for a given amount of insurance.

Question 11:

Please confirm if Mr. Allen completed any analysis of the Newfoundland and Labrador required average premium per private passenger vehicle compared to the actual average premium charged over the review period. If yes, please provide the analysis.

Response:

No, I have not performed such an analysis.